

#### Amendments to the Claims

19. (Currently Amended) A method for affinity management in a distributed computer system, comprising:

- providing an identifier for each of a plurality of addressing entities, wherein the identifier for each member of a group of the addressing entities with an affinity is the same group identifier;

- determining a number of service providers which are available to be addressed by an addressing entity to provide an instance of a service; and

- managing a distribution of addressing entities to service providers by:

  - applying a hash function to the identifier of an addressing entity to obtain a standard integer;

  - dividing the standard integer by the number of service providers and obtaining a modulus;

  - selecting a service provider by reference to the modulus; and

  - sending the addressing entity to the instance of the service provided by the selected service provider;

wherein the distributed computing system is a messaging system, the addressing entities are messages and the service providers are clustered queue managers hosting instances of one or more cluster queues.

20. (Previously Presented) A method as claimed in claim 19, wherein the step of determining the number of service providers is carried out periodically and the number of service providers is constant within a period.

21. (Previously Presented) A method as claimed in claim 19, wherein the method includes providing an index of the available service providers referenced by modulus values.

22. (Previously Presented) A method as claimed in claim 19, wherein if a selected service provider is unavailable, the addressing entity is sent to the next service provider in a predetermined order.

23. (Previously Presented) A method as claimed in claim 19, wherein if a service provider fails, a process is activated to retrieve previously delivered addressing entities.

24. (Previously Presented) A method as claimed in claim 19, wherein if a service provider fails, that service provider can be reinstated after ensuring that there are no addressing entities with a group affinity in alternative service providers.

25. (Previously Presented) A method as claimed in claim 19, wherein if a service provider fails, addressing entities sent to that service provider are re-distributed.

26. (Cancelled).

27. (Previously Presented) A method as claimed in claim 26, wherein the group identifier is in the form of a Universally Unique Identifier (UUID).

28. (Cancelled).

29. (Currently Amended) A system for affinity management in a distributed computer system, the system comprising:

a computing device, including:

a plurality of addressing entities each with an identifier, wherein the identifier for each member of a group of addressing entities with an affinity is the same group identifier;

a list of a plurality of service providers which are available to be addressed by an addressing entity to provide an instance of a service;

means for managing a distribution of addressing entities to service providers by

using an algorithm with the following steps:

applying a hash function to the identifier of an addressing entity to obtain a standard integer;

dividing the standard integer by the number of service providers in the list and obtaining a modulus; and

selecting a service provider by reference to the modulus; and

means for sending the addressing entity to the instance of the service provided by the selected service provider;

wherein the distributed computing system is a messaging system, the addressing entities are messages and the service providers are clustered queue managers hosting instances of one or more cluster queues.

30. (Previously Presented) A system as claimed in claim 29, wherein the list of service providers is updated periodically and the number of service providers on the list is constant within a period.

31. (Previously Presented) A system as claimed in claim 29, wherein a mechanism is provided to inform a workload manager of the service providers given in the list.

32. (Previously Presented) A system as claimed in claim 29, wherein the system includes an index of service providers in the list referenced by modulus values.

33. (Previously Presented) A system as claimed in claim 29, wherein if a selected service provider is unavailable, a workload manager sends the addressing entity to the next service provider in a predetermined order.

34. (Previously Presented) A system as claimed in claim 29, wherein if a service provider fails, means are provided to retrieve previously delivered addressing entities.

35. (Previously Presented) A system as claimed in claim 29, wherein if a service

provider fails, means are provided to assure that there are no addressing entities with a group affinity in alternative service providers before the failed service provider is reinstated.

36. (Previously Presented) A system as claimed in claim 29, wherein if a service provider fails, means are provided to re-distribute addressing entities sent to that service provider.

37. (Cancelled).

38. (Previously Presented) A system as claimed in claim 37, wherein the group identifier is in the form of a Universally Unique Identifier (UUID).

39. (Cancelled).

40. (Previously Presented) A computer program product stored on a computer readable storage medium, for affinity management in a distributed computer system, comprising computer readable program code means for performing the steps of:

- providing an identifier for each of a plurality of addressing entities, wherein the identifier for each member of a group of addressing entities with an affinity is the same group identifier;

- determining the number of service providers which are available to be addressed by an addressing entity to provide an instance of a service;

- managing the distribution of addressing entities to service providers by:

- applying a hash function to the identifier of an addressing entity to obtain a standard integer;

- dividing the standard integer by the number of service providers and obtaining a modulus;

- selecting a service provider by reference to the modulus; and

- sending the addressing entity to the instance of the service provided by

the selected service provider;

wherein the distributed computing system is a messaging system, the addressing entities are messages and the service providers are clustered queue managers hosting instances of one or more cluster queues.